

U.S. Patent Application Serial No.: 10/551,356

Response filed March 9, 2011

Reply to OA dated December 10, 2010

REMARKS

Claims 4-8 are pending in this application, with claims 5, 6 and 8 withdrawn from consideration. No amendment is made in this Response. It is believed that this Response is fully responsive to the Office Action dated **December 10, 2010**.

Claims 4 and 7 are rejected under 35 U.S.C. §103(a) as being unpatentable over Miller et al. (US 5,289,975) in view of Yamada (US 2003/0051851), and JP2001-293551, all previously cited, and also in view of Anderson et al. (US 5,423,520). (Office Action paragraph no. 2)

The rejection of claims 4 and 7 is respectfully traversed and reconsideration is requested.

Summary of the rejection

At lines 1-10 of paragraph no. 2 of the present Office action, Miller is cited for disclosing a method and apparatus for atomizing molten metal comprising a discharge nozzle (10), which melts metal, and a discharge port for jetting the molten metal from one end of the discharge nozzle. Yamada is cited for disclosing a pressing body (20A), and JP 2001-293551 is cited for disclosing a discharge nozzle (12) that includes a curved surface shaped inner wall.

At line 11 of paragraph no. 2, the Examiner cites Anderson for disclosing that a molten metal jetted from the discharge port is spherical molten metal droplets (citing column 3, lines 60-68).

The Examiner then states that it would have been obvious:

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“to utilize in Miller a pressing body as taught by Yamada in order to press said molten metal in said nozzle, and said discharge nozzle includes a curved surface shaped inner wall as taught by JP 2001-29351, in order to form a focal point at said discharge port or in the vicinity of said discharge port, and a molten metal jetted from said discharge port is spherical molten metal droplets as taught by Anderson in order to quench to form fine metallic powders.”

Arguments

In traversing this rejection, Applicant notes that Miller, Yamada and JP ‘551 are cited almost identically to their citation in the previous final Office action. The newly cited Anderson reference is cited only for disclosing that molten metal is discharged from a discharge port in the form of spherical molten metal droplets. Applicant generally maintains the arguments made in the Response of October 7, 2010, and submits that the additional citation of Anderson does not further provide any suggestion or motivation for the invention of claims 4 and 7.

In this regard, Applicant notes that amendment of October 7, 2010, to recite “spherical molten metal droplets” was only a clarifying amendment in response to the rejection under 35 U.S.C. 112, second paragraph, and was not intended to overcome the rejection under 35 U.S.C. 103(a). The fact that Anderson discloses spherical molten droplets does not address the failure of the combination of Miller, Yamada and JP ‘511 to suggest the limitations of claim 4 and 7.

In the rejection, the Examiner cites Miller ‘975 as disclosing a nozzle, stating that Miller does not disclose a pressing body. The rejection is based on modifying Miller’s nozzle to include a pressing body as taught by Yamada and a curved surface shaped inner wall as taught by JP ‘551 in order to form a focal point.

The Examiner appears to acknowledge that Yamada does not disclose a nozzle meeting the limitation “wherein said discharge nozzle includes a curved surface shaped inner wall which

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forms a focal point at said discharge port or in the vicinity of said discharge port" recited in claim 4. Note that channel 25 of hot nozzle 22 in Yamada (see [0084]) is the nozzle in this reference, and this clearly does not meet the limitation of the claims.

The Examiner appears to be arguing that there is a curved surface shaped inner wall in JP '551 and this **does** form a focal point at the discharge port or in the vicinity of the discharge port (see page 2, last lines, of the present Office action). That is, the Examiner is implying that the proposed modification to include a curved surface shaped inner wall as taught by JP '551 would inherently form a focal point.

Applicant respectfully disagrees with the Examiner that JP '551 discloses a curved surface shaped inner wall of the discharge nozzle and that this forms a focal point at or in the vicinity of the discharge point. Applicant submits that the Examiner has provided no basis for this conclusion.

In fact, Applicant submits that a review of the teaching of JP '551 does not support the Examiner's conclusion. Specifically, JP '551 discloses a method for producing an amorphous alloy-made member. In the device of JP '551, a vacuum pump is connected to vacuum suction port 16, and the inside of chamber 15 is evacuated (see paragraph [0010]). Then, current is sent through induction coil 13, and the hardener in syringe 12 is heated and made to dissolve. Gas is introduced from gas introduction port 12a, pressurizing the inside of syringe 12 and **injecting the dissolved hardener** from nozzle hole 12b, whereby it is **cast into mold 14**.

That is, the apparatus of JP '551 is an apparatus for **injecting a molten liquid from a nozzle into a mold**. There is **no atomization** in JP '551, and there is not even any disclosure that the molten liquid leaves the nozzle in the form of droplets of any shape. There is no

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suggestion in JP ‘551 for any nozzle meeting the limitation of claim 4 of forming a focal point at the discharge port or in the vicinity of the discharge port.

Moreover, the apparatus of JP ‘551 is completely unrelated to Miller ‘975’s **atomization** apparatus, and the teachings of the references **cannot be combined**. In particular, it would not be possible to substitute the nozzle 12b of JP ‘551 for the nozzle in Miller; these are different kinds of nozzles with different purposes, and such a substitution would not be functional. Note that MPEP 2143.01(V) states:

If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)

The apparatus of JP ‘551 is similarly unrelated to that of Anderson, and which is a metal atomizing apparatus. Anderson discloses an *in situ* control system for atomization, generally applicable to confined feed (CF) nozzles, which produce fine metallic powder by atomizing a suitable melt to form an atomization spray (column 1, lines 20-28). The Examiner cites the reference at column 3, lines 60-68 is a disclosure of a gas atomizing apparatus, in which the atomizing nozzle 22 atomizes the melt, producing “generally spherical, molten droplets of melt” However, the nozzle of JP ‘551 is designed to inject liquid into a mold, and there is no motivation in Anderson for modification of the nozzle of JP ‘551.

Accordingly, claims 4 and 7 are not obvious over Miller et al. (US 5,289,975), Yamada (US 2003/0051851), JP2001-293551, and Anderson et al. (US 5,423,520), taken separately or in combination.

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If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact the applicants' undersigned agent at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, the applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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